tion display system and a touch-detection system is described in more detail with reference to FIG. **6**.

**[0015]** Continuing with FIG. **1**, display screen **102** may include a clear, transparent portion, such as a sheet of glass, and a diffuser (i.e., a diffuser layer) disposed over the clear, transparent portion. Display screen **102** may further include a topography-changing layer. As described above, the topography-changing layer may be configured to change in topography in response to external stimuli. For example, the topography-changing layer may include light-induced shape-memory polymers, as introduced briefly above. Such light-induced shape-memory polymers may be incorporated into the topography-changing layer in any suitable manner. In some cases, the topography-changing layer may be a deposited layer in that the light-induced shape-memory polymers are deposited, for example, by a spray coating technique. In other cases, light-induced shape-memory polymers having a hexagonal cross-section may be oriented within the topography-changing layer such that the hexagonal cross-section may be parallel to the display screen. Examples of such light-induced shape-memory polymers are described further with reference to FIGS. **2** and **3**. Further, in some embodiments, light-induced shape-memory polymers may be substantially transparent to allow transmission of visible light, such as visible light of imaging engine **104**, so as not to obstruct formation of images on display screen **102**.

**[0016]** Continuing with FIG. **1**, surface computing system **100** may further include a topography-changing engine **112** to coordinate activation of the light-induced shape-memory polymers within the topography-changing layer. Topography-changing engine **112** may be configured to project agitation light towards display screen **102**. This agitation light may be modulated at a pixel level to selectively change a topography of the topography-changing layer. A light modulator for the agitation may be of any suitable type, such as an LCD, DLP, etc. One approach to modulating the agitation light at a pixel level may include directing agitation light towards a single light-induced shape-memory polymer, where the polymer has a cross-section (e.g., an above-described hexagonal cross-section) defining an area of the topography-changing layer of a same order of magnitude as a pixel. Such a polymer is then independently addressable, in that the agitation light may be directed to that particular polymer independently of other nearby light-induced shape-memory polymers. Accordingly, illumination by the agitation light induces a change in a size of that light-induced shape-memory polymer, thus changing the topography of the topography-changing layer.

**[0017]** The agitation light may be of any suitable wavelength capable of inducing a change in size and/or shape of the light-induced shape-memory polymers present within the topography-changing layer. For example, the light-induced shape-memory polymers may contain cinnamic groups, and may therefore respond to agitation light of an ultraviolet band. Light-induced shape-memory polymers containing cinnamic groups may be configured to include switches responsive to light illumination such as cinnamic acid and cinnamylidene acetic acid. An advantage of using such polymers is that they may be unaffected by light of wavelengths other than ultraviolet. Accordingly, visible light projected and utilized by imaging engine **104** to display images on display screen **102** may not have an adverse effect on the light-induced shape-memory polymers. Likewise, infrared light, such as that projected and utilized by touch module **106** for touch input detection and recognition, may also not adversely affect the light-induced shape-memory polymers.

**[0018]** Such light-induced shape-memory polymers containing cinnamic groups may deform in response to ultraviolet light illumination based on their structure at a molecular level. Such a polymer may have portions of the polymer that respond to ultraviolet light illumination of a first band by bonding to one another. Such polymers may further include connectors that connect these bonded portions together, and are responsible for determining an original shape of the polymers. When the ultraviolet light of a first band is removed, these bonded portions remain, and thus the temporary shape is maintained. However, when the polymer is illuminated with ultraviolet light of a second band, the bonds between these portions are broken, leaving the connectors, and thus causing the polymer to return to its original shape.

**[0019]** Light-induced shape-memory polymers containing cinnamic groups may be formed by any suitable approach. For example, one such approach forms a polymer having a grafted cinnamic group, where a cinnamic acid (CA) is grafted onto the polymer. Such grafted polymers may be obtained by copolymerization of n-butylacrylate (BA), hydroxyethyl methacrylate (HEMA) and ethyleneglycol-1-acrylate-2-CA (HEA-CA) with poly(propylene glycol)-dimethacrylate as crosslinker. Alternatively, another suitable approach for creating a polymer containing a cinnamic group includes forming a permanent network of the polymer from BA with 3.0 wt % poly(propylene glycol)-dimethacrylate as crosslinker. It is to be understood that the above examples are provided as nonlimiting examples, and any suitable light-induced shape-memory polymer may be used without departing from the spirit of this disclosure.

**[0020]** In some embodiments, such light-induced shape-memory polymers may be configured to expand such that the polymer becomes elongated. FIG. **2** shows an example of light-induced shape-memory polymers **200** of a topography-changing layer of a display screen **202**. As depicted, each of the light-induced shape-memory polymers **200** has a hexagonal cross-section parallel to display screen **202**. It should be understood that a hexagonal cross-section is shown as an example, and that light-induced shape-memory polymers **200** may have a cross-section of any other suitable shape such as square, rectangular, circular, etc.

**[0021]** As an example, agitation light **204** of an ultraviolet band is directed at one of the polymers, namely light-induced shape-memory polymer **206**. Such illumination induces a change in a size of light-induced shape-memory polymer **206** independent of the remaining light-induced shape-memory polymers **200**. As depicted, light-induced shape-memory polymer **206** elongates such that a topography of the topography-changing layer of display screen **202** has a vertical rise at the location of light-induced shape-memory polymer **206**. In some cases, light-induced shape-memory polymer **206** may undergo such a change in size when illuminated by light of agitation light **204** within a first ultraviolet band. The resulting temporary size/shape of light-induced shape-memory polymer **206** may be sufficiently stable. For example, in some cases temporary shapes of light-induced shape-memory polymers containing cinnamic groups may be stable for long periods of time, even when heated to 50° C. Further, such polymers may return to their original "remembered" state (i.e., contract) when exposed to light of agitation light **204** of a second ultraviolet band. In one particular example, light-induced shape-memory polymers may trans-